ANÆSTHETICS. A NECESSARY PART OF THE CURRICULUM

A Plea for more Systematic Teaching

A PAPER READ BEFORE THE THAMES VALLEY BRANCH OF THE BRITISH MEDICAL ASSOCIATION ON WEDNESDAY, MARCH 16th, 1892

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A PLEA FOR MORE SYSTEMATIC TEACHING.

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As a general rule, the discussions which follow the reading of papers on anæsthetics resolve themselves into personal expressions of opinion, on the part of the individual speakers, as to which drug is universally applicable in all cases and under all conditions, or, as it is usually put, "which is the best anæsthetic;" and it almost seems to be lost sight of that there are many other problems connected with the subject which are well worthy of attention. As I am not by any means convinced of the advantage of constantly discussing a subject from the same point of view, it occurred to me that it might possibly be of interest if I entered upon an aspect of the question in which I have myself always been greatly interested, and which has been occupying my mind more particularly during the last few months in connexion with certain alterations now pending at Guy's Hospital. I allude to what I would term the "Systematic Teaching of Anæsthetics." I propose, then, to discuss very briefly—(*A*) the nature and character of the instruction in anæsthetics at present offered to the student; (*B*) some reasons for thinking that this instruction should

be improved upon; (*C*) a brief indication of the direction in which it is both possible and desirable to make this improvement.

A. The Nature and Character of the Instruction in Anæsthetics at present offered to the Student.

It may, I think, be assumed at the outset that at every medical school in the United Kingdom where lectures on surgery are delivered, some allusion is made in the course of those lectures to the subject of anæsthetics. I think, too, that it may be assumed that at every hospital attended by students, the respective surgeons occasionally direct attention clinically to their administration. But this can hardly be called "systematic teaching." With these general exceptions it does not appear, if one may judge from the prospectuses issued by the respective medical schools, that any special instruction in anæsthetics is afforded in Scotland, Ireland, or the provinces. In some instances, it is true, anæsthetists are attached to the several hospitals, but it would seem that their duties are, if I may use the term, functional rather than academic —limited, that is, to the mere administration, and not concerned with the teaching. In the metropolitan schools things are a little better; in London there are, including the Women's School, twelve medical schools, and these twelve schools are responsible for the education of between 40 and 50 per cent. of all the students registered at the Medical Council. To eleven out of these twelve schools special anæsthetists are attached; at the twelfth an "administrator of anæsthetics" is included among the appointments open to the student immediately after he has become qualified; and at one school, in addition to the anæsthetist to the hospital, there are two junior appointments open to students, the holders of which are qualified and resident in the hospital. In nine out of these eleven schools it is definitely stated in the prospectuses that instruction in

anæsthetics is given ; but the actual amount of instruction afforded varies considerably, and, of course, it is almost as impossible as it would be invidious to estimate the exact value of the instruction given in the several instances. In some few schools, for example, lectures and demonstrations are given ; in some the teaching appears to be limited to instruction simply, and this, of course, may mean almost anything. At some schools, too, the teaching is not included in the general course of study, but an extra fee is charged, and at some a certificate of instruction is required before the student can hold any or certain of the resident appointments. However, assuming that the instruction given at these nine hospitals is the best and most systematic possible, and that all the students attached to the respective hospitals sought for and obtained it, that would, after all, represent but 76 per cent. of the London students alone. As a matter of fact, however, at six of the largest of these nine hospitals an average of about 51 per cent. attend the classes and lectures. Assuming, then, that a similar percentage of students attend at the remaining three schools—which I very much doubt—this means that of all the London students only 35 per cent. are instructed in any special manner. This percentage, too, be it remembered, applies merely to the London schools, and it would be reduced to under 18 per cent. if we took into account the students of Scotland, Ireland, and the provinces; and a still greater reduction would be required if we were to attempt to estimate the quality as well as the quantity of the instruction given ; but the figures as they stand are quite sufficient for my present purpose. It results almost as a necessary corollary from this that many students must obtain almost their first experience in administering anæsthetics after they have qualified, and after they have gone beyond the reach of supervision and instruction.

B. Reasons for thinking that this Instruction should be improved upon.

I now propose to give some of the reasons which have led me to think that this amount of instruction is inadequate, and might advantageously be improved upon.

1. *Improvements in Surgery.*—Generally speaking, the art of surgery may be said to have improved precisely in proportion to the certainty with which we can foretell results; the possibility, however remote, of the death or subsequent illness of a patient as the direct result of the anæsthetic introduces an element of doubt which I think we ought to attempt to remove, and I think that if we taught anæsthetics more systematically, not only would the standard of average skill in administering them be raised, but we should soon get to know more about the subject. Again, of the many causes to which the improvements in surgery may be assigned, two at least stand out with particular prominence. First, the actual introduction of artificial anæsthesia in the modern acceptation of the term. Secondly, the elaborate attention paid to details. Nowadays a surgical operation is a much more complicated and deliberate proceeding than formerly, and even if it be denied that the induction of anæsthesia is absolutely essential for all operations, it may, on the other hand, assuredly be asserted that without it many of the tedious and prolonged operations of modern surgery would be impossible. Further, no details are now considered too minute or too trivial to receive the most anxious consideration and thought from the operating surgeon, who usually takes care too that those who assist him shall be well trained in his methods. Now I would claim for the administration of anæsthetics that it is in itself one of the essential details of every surgical operation, and as such should be taught with as much care as is nearly every other detail.

2. *Increase in the number of administrations.*—It is of course impossible to give more than the vaguest guesses at the actual number of administrations, but they must ob-

viously be enormous. Let each of us, for instance, try to recall the number of administrations he has himself conducted in private; let us, further, bear in mind the enormous amount of work done in this direction at the various hospitals throughout the country (including, of course, that increasingly important item, the dental hospitals); and let us also remember that anæsthetisation is not only possible, but is freely practised on both sexes and at all ages. Bearing all these facts in mind, we can appreciate the difficulty, or even the utter impossibility, of forming anything like an accurate estimate, and can understand that the numbers, if they could be arrived at, would most likely prove to be very large indeed. Without going so far as actually to contrast these numbers with the number of childbirths, yet I think that a very fair fractional comparison might be made; we might say, for instance, that the number of anæsthetisations is a tenth, or a twentieth, or even a hundredth of the number of childbirths. Parturition, too, is a natural process, and in the majority of cases quite normal; on the other hand, anæsthetisation is essentially an unnatural process, and cannot therefore in the same sense ever be termed normal. A precisely similar comparison might be made in respect to other branches of our art, I merely choose that of obstetrics as the one with which we are all probably most familiar. But with whichever branch the comparison is made, I venture to say that the relative amount of instruction afforded will bear no comparison either as to quantity or quality.

3. *Importance of the subject.*—All the reasons which I am now giving for improvement in teaching bear, of course, upon the importance of the subject; but under this particular head I wish to insist upon the desirability of directing the student's attention very emphatically to the responsibility he assumes when he undertakes to induce anæsthesia. The time has happily passed when the dispenser, the half-trained nurse, or even the coachman, would be considered competent to administer anæsthetics; but I think that even now the duties are sometimes undertaken in too

light-hearted and casual a manner. Without any desire to over-estimate its importance, I think that it cannot be insisted on too frequently or too strongly, that in every case the administration of the anæsthetic requires the sole and undivided attention of one individual, to which axiom I should myself be inclined to add, that it is of advantage if that individual has nothing whatever to do with the general treatment, past or future, of the case.

4. *Improvements in the methods of administration and in our knowledge of the subject.*—As has happened in all other branches of medical science, increased knowledge has led to the introduction of great improvements in the methods employed, which of necessity tend to become more and more complicated and delicate. A piece of rag and a bottle no longer constitute the sole armamentaria of the anæsthetist, but cones, face-pieces, inhalers, &c., of varying degrees of complexity, have been introduced, all of which require a certain amount of skill in their manipulation, and with which it is highly desirable that the student should become familiar. Our knowledge, too, of the alterations in the physiological state induced by the anæsthetic has undoubtedly increased, and would increase still further under the stimulus of systematic teaching.

5. *The complicated nature of the process.*—Apart from mere manipulation, there are several points connected with the administration of anæsthetics which call for careful study and anxious attention, and it is to the consideration of these points, I believe, rather than in futile efforts to select (whether by physiological, clinical, or statistical, observations) a universal anæsthetic, that the greatest good is likely to result. For instance, the preparation that the patient should undergo prior to the operation; the best time for operating; the after treatment of the effects of the anæsthetic, such as the sickness, &c.—are all points upon which the anæsthetist will occasionally be asked to express an opinion. More frequently, however, he will be called upon to exercise his judgment in the choice of the particular anæsthetic to be used, having due regard to the

idiosyncrasy of the patient, his sex and age, his previous history and present physical condition, and the nature and probable duration of the operation; the anæsthetist will also be called upon to select the particular method or methods to be employed, and to change, if need be, during the course of the anæsthetisation the particular drug with which narcosis was originally induced; to watch for and promptly treat any emergencies that may arise, and to warn the operating surgeon if the condition of the patient becomes such as to render further proceedings unadvisable. Upon all such points as these there is something to be said, something to be taught, and further information would rapidly accrue if the teaching, and with it of necessity the study of the subject, were undertaken in a more systematic manner.

6. *The attendant difficulties and dangers.*—I now come to the consideration of what is perhaps the most important of all the reasons which I am now advancing—viz., the difficulties and dangers connected with the process of anæsthetisation. We cannot but admit that the process is essentially an unnatural one, and as such, patients who submit themselves to it cannot but run a certain amount of risk; and we know, further, that a good many deaths can be ascribed directly to the administration of one or other anæsthetic. Our duty, both to our patients and to ourselves, urges us to look these facts fully in the face, and, by adopting every possible precaution, to attempt to minimise, even if we cannot entirely overcome, these dangers. I trust that others have been as fortunate as myself in never having gone through the agony of being present at an actual death from an anæsthetic; on the other hand, but few anæsthetists, I expect, but can recall more than one case in which "their hearts have been in their mouths," and the patient's life has hung by a mere thread. Those of us who have read the records of the fatal cases cannot but have been struck by the varied and, in some instances, almost absurd means of resuscitation adopted—generally, too, without success. Systematic teaching would at least afford us help

at this, one of the most critical periods of our professional career; it would teach us, at any rate, what to do under such circumstances, and, what to my mind is much more important, it would teach us what to avoid doing, for I believe that, like "meddlesome midwifery," fussy anæsthetisation is essentially bad.

With regard to the actual death-rate, I fancy that I have observed in some quarters a tendency to treat this matter a little too lightly—to try, for instance, to explain the matter away by saying that, after all, considering the number of administrations, the deaths are really remarkably few, and, in fact, that on the whole it is safer to take an anæsthetic than to make a railway journey, or as I believe one newspaper put it, safer than drinking a glass of whiskey. All this may be perfectly true, and yet I venture to think that this is not the way in which a profession whose object is to *save* life should approach this subject. I do not in any way wish to over-estimate the dangers; but at the same time I think that, if we hope to overcome or mitigate them, we ought to have as accurate a knowledge as possible of the actual extent of those dangers. The following table,

Death-rate from Anæsthetics in England alone (from the Reports of the Registrar-General, 1881 to 1890).

	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890
Chloroform	21	30	—	28	20	23	36	32	32	36
Nitrous oxide	—	—	1	—	—	—	—	—	—	1
Ether	—	1	—	4	3	2	2	—	1	4
Methylene	—	—	1	—	—	—	—	—	—	—
Ether, &c.	7	—	—	—	—	—	—	—	—	—
Chloroform and ether	—	—	29	—	—	—	—	—	—	—
Anæsthetic not specified...	—	—	—	2	2	3	1	1	3	1
Totals.....	28	31	31	34	25	28	39	33	36	42

Note.—This table refers *to England alone;* the figures relating to Scotland and Ireland do not appear to be published under a separate head. Prior to 1884 there seems to have been much irregularity in the method of classification.

which I have taken from the reports of the Registrar-General for the ten years 1881-1890, shows that the dangers are

very real dangers, and do not exist simply in the imaginations of anæsthetists. Gloss it over as we will, explain it as we like, argue about it logically or illogically as we choose, we cannot at any rate get over the fact that the number of deaths that occur during the administration of anæsthetics is not only numerous, but increasing. The returns for 1891 have not yet been published, but in going through the papers with a view to forming an estimate as to what the number was likely to be, I obtained some results which are at least interesting, and which, to my mind, have a very particular bearing upon the question of the teaching of anæsthetics. Judging from the above table, I think that we may anticipate that the death-rate in England alone for 1891 will be a little under or a little over fifty; of these I have been able to find, either in *The Lancet* or the *British Medical Journal*, records of forty cases; of these forty cases, sufficient details are given in thirty-seven to enable me to say that twenty-seven occurred in hospitals or public institutions of some sort, and the remaining ten in private practice. Again, I have been able to ascertain the names and professional standing of the administrators in twenty-six instances, and I find that in by far the majority of cases the administrators have been comparatively young men—in fact the average standing in the whole twenty-six cases was only four years and a-half, and in sixteen it was less than two years and a-half; this comparatively low average is of course largely due to the number of cases that are reported from hospitals, but as a matter of fact the same remarks apply equally to the much smaller number reported from private practice. Then, again, in these twenty-six cases I have been able to ascertain the particular medical school at which the administrators received their professional training, and arranging these schools into three groups, according to whether, in my opinion at least, the anæsthetic teaching was *nil*, very slight, or fair, I find that in these twenty-six instances the administrators had received no systematic instruction in seventeen cases, very little, if any, in five, and fair instruc-

tion in only four. In the same way in the previous year, 1890, ten cases are sufficiently fully reported; and, adopting precisely the same classification of the schools, six cases would come under the head of *nil*, two as very slight, and two as fair. With regard to other years, I may perhaps say that I have gone very carefully through the papers up to 1881, and find that precisely the same principle holds good throughout; but the actual figures are too small to make it worth while to tabulate them, as I at first intended. The question as to the professional standing of the administrators is of course a personal one, and obviously I cannot give you chapter and verse for my statements, and for a similar reason too I cannot well disclose the system of classification of the schools that I have adopted; and on these points, therefore, I must be contented if my deductions are accepted as matters of opinion; but I may perhaps claim for them that they should rank as the opinions of one who has gone very carefully into the subject. But however that may be, of this there can be no doubt whatever, that the greatest number of deaths occur in the practice of young administrators; that is, at just that period of their professional career when teaching is most likely to be of service, and to stand in the place of that experience which they gain subsequently. Practical instruction during his student days, under the direct supervision and guidance of someone qualified to teach the subject, would furnish a man with a fund of information of far greater real value than would be obtained from the experience gained from many hundreds of cases without such teaching. Under the present arrangements, as I have endeavoured to show, such instruction falls to the lot of but a very small percentage; and my contention is that, if not compulsory, such instruction should at least be possible for all.

These are the chief reasons I would advance for the improvements I suggest; other arguments might readily be adduced—such, for instance, as that the habits of close attention and accurate observation entailed in the proper administration of anæsthetics, render the study of the sub-

ject a not unworthy adjunct to any system of medical education. I think, however, that I have said sufficient to justify my conclusions.

C. A Brief Indication of the Direction in which it is possible to make this Improvement.

An outline of the plan I would suggest is this: In the first place, candidates for the various degrees and diplomas should be required to produce evidence of proper instruction in the subject; this might well take the form of a certificate of having attended a definite course of lectures and demonstrations, and of having personally administered in a certain number of cases. This is, I think, the least that can be done by the examining bodies. In the second place, I think that at the hospitals the system of teaching anæsthetics should be the same as that adopted in respect to medicine, surgery, and other branches—that is, that after attending the classes the student should be appointed "clerk to the anæsthetist," when, under the direct supervision and guidance of his teacher, he should administer to the necessary number of cases, and should keep whatever notes and records it may be thought advisable. Finally, in the large hospitals especially, it would be of advantage to appoint resident anæsthetists to take charge of the administrations in the absence of the honorary officer. Some such plan as this would, I think, do much to place the teaching of anæsthetics upon a proper basis, and that, too, without dislocating existing arrangements, and, if generally adopted, I feel sure that good results would follow.

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